

WE CLAIM

1. A method of identifying a failure location in any datapath in a set of datapaths in a communication element, each datapath of said set of datapaths traversing from an ingress point through at least a first component to an egress point, said method comprising:

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Providing a diagnostic cell adapted to be inserted at a starting point upstream of said first component in said any datapath;

Providing at least a first diagnostic cell counter module adapted to be associated with a first location in said first component, said first diagnostic cell counter module adapted to recognize when said diagnostic cell passes said first location and adapted to track passage of said diagnostic cell past said first location;

Inserting said diagnostic cell into said any datapath at said starting point; and

Analyzing said diagnostic cell counter module to identify said failure location in said any datapath.

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2. A method of identifying a failure location in any datapath in a set of datapaths as claimed in claim 1, wherein

said ingress point and said egress point reside on a same component in said communication element;

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said set of datapaths is routed from said ingress point to said egress point via a hardware loop-back; and

said diagnostic cell counter module tracks passage of said diagnostic cell past said first location using a counter.

3. A method of identifying a failure location in any datapath in a set of datapaths as claimed
in claim 2 wherein said failure location is identified as being downstream of said first location
when said diagnostic cell counter module recognized that said diagnostic cell passed said first
5 location.

4. A method of identifying a failure location in any datapath in a set of datapaths as claimed
in claim 3 wherein a second diagnostic cell counter module is provided at a second location in
said datapath, said second diagnostic cell counter module adapted to recognize when said
diagnostic cell passes said second location and adapted to track passage of said diagnostic cell
past said second location.

5. A method of identifying a failure location in any datapath in a set of datapaths as claimed
in claim 4 wherein said failure location is identified as being downstream of said second location
15 when said second diagnostic cell counter recognized that said diagnostic cell passed said second
location.

6. A method of identifying a failure location in any datapath in a set of datapaths as claimed
in claim 5 wherein said datapath is a VPI/VCI connection.

7. A system for identifying a failure location in any datapath in a set of datapaths in a
communication element, each datapath of said set of datapaths traversing from an ingress point
through at least a first component to an egress point, said system comprising:

at least a first diagnostic cell counter module adapted to be associated with a first location
in said first component, said first diagnostic cell counter module adapted to recognize
when a diagnostic cell passes said first location and adapted to track passage of said
5 diagnostic cell past said first location;

an analysis module adapted to analyze said diagnostic cell counter module to identify
said failure location in said any datapath.

8. A system for identifying a failure location in any datapath in a set of datapaths as claimed
in claim 10 wherein

said ingress point and said egress point reside on a same component in said
communication element;

said set of datapaths is routed from said ingress point to said egress point via a hardware
15 loop-back; and

said diagnostic cell counter module tracks passage of said diagnostic cell past said first
location using a counter.

9. A system for identifying a failure location in any datapath in a set of datapaths as claimed
20 in claim 8 wherein said analysis module identifies said failure location as being downstream of
said first location when said diagnostic cell counter module recognized that said diagnostic cell
passed said first location.

10. A system for identifying a failure location in any datapath in a set of datapaths as claimed in claim 9 wherein

a second diagnostic cell counter module is provided at a second location in said any
datapath, said second diagnostic cell counter module being adapted to recognize when
said diagnostic cell passes said second location and being adapted to track passage of said
diagnostic cell past said second location.

11. A system for identifying a failure location in any datapath in a set of datapaths as claimed in claim 10 wherein

said analysis module is adapted to identify said failure location as being downstream of
said second location when said second diagnostic cell counter recognized that said
diagnostic cell passed said second location.

12. A system for identifying a failure location in any datapath in a set of datapaths as claimed in claim 11 wherein said any datapath is a VPI/VCI connection.